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CONDITIONAL APPROVAL OF THE OU4 REMEDIAL INVESTIGATION REPORT

10/06/93

USEPA/DOE-FN
13
COMMENTS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

OCT 06 1993

Mr. Jack R. Craig
United States Department of Energy
Feed Materials Production Center
P.O. Box 398705
Cincinnati, Ohio 45239-8705

HRE-8J

RE: Conditional Approval of the OU 4 Remedial Investigation Report

Dear Mr. Craig:

The United States Environmental Protection Agency (U.S. EPA) has completed its review of the revised Operable Unit (OU) 4 Remedial Investigation (RI) Report and Response To Comments (RTC) document. The United States Department of Energy (U.S. DOE) has adequately addressed the majority of U.S. EPA's comments with appropriate responses and subsequent revisions in the RI Report. However, there still remain a few comments that need to be addressed.

Therefore, U.S. EPA hereby approves the revised OU 4 RI Report pending incorporation of the attached comments into the RI Report. U.S. DOE must incorporate the attached changes into the OU 4 RI Report within thirty (30) days receipt of this letter.

Although it is not a requirement of the OU 4 RI Report, the source(s) of the contaminated liquids in the decant sump tank needs to be identified. This is important to fully understand the sources of the contaminated groundwater in the perched aquifer. U.S. EPA is aware of the investigative work being conducted in the perched groundwater as part of OU 5, and requires that this issue be resolved in the near future.

Finally, to expedite review, U.S. EPA recommends that U.S. DOE redline all text revisions in future revised Reports.

ALLEN (R)
PARTIAL ACTION
RESPONSE
TO 5-2219
(6620)

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Please contact me at (312) 886-0992 if you have any questions.

Sincerely,

James A. Saric
Remedial Project Manager

Enclosures

cc: Graham Mitchell, OEPA-SWDO
Pat Whitfield, U.S. DOE-HDQ
Nick Kaufman, FERMCO
Jim Theising, FERMCO
Paul Clay, FERMCO

ENCLOSURE

TECHNICAL REVIEW COMMENTS ON THE RTC FOR OU4 DRAFT RI REPORT AND OU4 RI REPORT, REVISION 1

(Six Pages)

TECHNICAL REVIEW COMMENTS ON THE RESPONSE TO COMMENTS (RTC) FOR OPERABLE UNIT (OU) 4 DRAFT REMEDIAL INVESTIGATION (RI) REPORT AND OU4 RI REPORT, REVISION 1 (EXCEPT FOR APPENDIX D)

SPECIFIC COMMENTS

Commenting Organization: U.S. EPA **Commentor:** Saric
Section #: NA **Page #:** NA **Line #:** NA **Code:**
Original Specific Comment #: 7
Comment: In response to the U.S. Environmental Protection Agency (U.S. EPA) request that all data tables indicate whether aqueous radiological and metals samples are filtered, U.S. Department of Energy (U.S. DOE) indicated that footnotes would be added to the data tables in Section 4-0. These footnotes have only been added to a few data tables. All appropriate data tables should be revised to include these footnotes.
Response:
Action:

Commenting Organization: U.S. EPA **Commentor:** Saric
Section #: 2.7.3 **Page #:** 2-48 **Line #:** 6 **Code:**
Original Specific Comment #: 14
Comment: U.S. EPA requested a clearer definition of the term "full radiological analysis." U.S. DOE stated that the terms "isotopic uranium," "Sr-90," "isotopic thorium," "Tc-99," "total uranium," "Am-241," "Cs-137," and "isotopic plutonium" would be added to the text. U.S. EPA could not locate these terms in the revised RI report. U.S. DOE should verify that this information is included in the revised RI report.
Response:
Action:

Commenting Organization: U.S. EPA **Commentor:** Saric
Section #: Table 4-1 **Page #:** 4-4 to 4-6 **Line #:** NA **Code:**
Original Specific Comment #: 29
Comment: As reported in the revised RI report, the background concentrations of antimony, arsenic, cadmium, lead, and thallium in groundwater are still above maximum contaminant levels (MCL). This situation is highly unlikely and must be investigated. However, if this situation actually exists, the method for determining contaminants of concern may need to be modified for these inorganics.
Response:
Action:

Commenting Organization: U.S. EPA **Commentor:** Saric
Section #: Table 4-28 **Page #:** NA **Line #:** NA **Code:**
Original Specific Comment #: 46
Comments: In response to the original U.S. EPA comment that requested depth information for inorganic berm soils data, U.S. DOE indicated that a table or figure showing this information would be added to the revised RI report. U.S. EPA was unable to locate this information. U.S. DOE should include this data in the revised RI report.
Response:
Action:

TECHNICAL REVIEW COMMENTS ON THE RTC FOR OU4 AND APPENDIX D OF THE OU4 RI REPORT, REVISION 1

GENERAL COMMENTS

Commenting Organization: U.S. EPA **Commentor:** Saric
Section #: D.2.1.2 **Page #:** D-2-5 **Line #:** 21 **Code:**
Original General Comment #: 5
Comment: U.S. DOE is correct in noting that the background sampling plan was reviewed and approved by U.S. EPA. However, some samples collected to establish representative background concentrations may actually have been collected from locations contaminated by the site or other anthropogenic sources. Therefore, the revised report should discuss the criteria used to determine that each sample collected to represent background concentrations actually represents background concentrations and was not impacted by the site or other anthropogenic sources.
Response:
Action:

SPECIFIC COMMENTS

Commenting Organization: U.S. EPA **Commentor:** Saric
Section #: D.3.3.2 **Page #:** D-3-55 **Line #:** 16 and 22 **Code:**
Original Specific Comment #: 34
Comment: Intake Equations D.3-9 and D.3-10 were rewritten by U.S. DOE. However, Equation D.3-9 does not include a conversion factor (CF). In fact, a CF of 1×10^{-3} kilograms per gram (kg/g) is required to produce an intake value (I_{iv}) in the units required, pico curies (pCi). Therefore, Line #16 should be revised to include a CF term, and Line 22 should be revised to read "CF = Conversion factor (1×10^{-3} kg/g)."
Response:
Action:

Commenting Organization: U.S. EPA **Commentor:** Saric
Section #: D.3.3.7 **Page #:** D-3-62 **Line #:** 7 **Code:**
Original Specific Comment #: 34
Comment: Intake Equation D.3-17 (now labeled as Equation D.3-20) was rewritten to include a CF term (365 days per year). This CF term is not required. Equation D.3-20 should be revised to remove the CF term. The revised equation will produce an intake value (I_w) in the units required (pCi).
Response:
Action:

Commenting Organization: U.S. EPA **Commentor:** Saric
Section #: D.3.3 **Page #:** D-3-47 **Line #:** NA **Code:**
Original Specific Comment #: 38
Comment: Footnotes e, f, and p of Table D.3-12 include names of individuals involved and dates of specific guidance or memoranda. However, the organizations with which the individuals named are associated are not provided. Therefore, Footnotes e, f, and p of Table D.3-12 should be revised to specify these organizations for each individual named.
Response:
Action:

Commenting Organization: U.S. EPA **Commentor:** Saric
Section #: D.4.1 **Page #:** D-4-2 to D-4-5; D-4-7 to D-4-10 **Line #:** NA **Code:**
Original Specific Comment #: 56
Comment: Risk calculations were revised to respond to other comments on the risk assessment. However, U.S. DOE should have used this opportunity to compare toxicity values in the OU4 RI Report, Revision 1, to toxicity values currently available, and update and revise toxicity values as necessary.
Response:
Action:

Commenting Organization: U.S. EPA **Commentor:** Saric
Section #: D.4.1 **Page #:** D-4-8 **Line #:** NA **Code:**
Original Specific Comment #: 59
Comment: The reference in Table D.4-2 for methylene chloride is incorrectly footnoted in Footnote e as Health Effects Assessment Summary Table (HEAST). The correct reference is Integrated Risk Information System (IRIS); therefore, the footnote should be changed to Footnote d to indicate IRIS.
Response:
Action:

Commenting Organization: U.S. EPA **Commentor:** Saric
Section #: D.4.2.2.1 **Page #:** D-4-21 **Line #:** 8 **Code:**
Original Specific Comment #: 65
Comment: Because inorganic forms of antimony are more likely to be present at the Fernald Environmental Management Project (FEMP) than organic forms, an uncertainty discussion addressing the use of the oral toxicity value of antimony potassium tartrate should be added to the text.
Response:
Action:

Commenting Organization: U.S. EPA **Commentor:** Saric
Section #: D.6.3 **Page #:** D-6-13 **Line #:** 20 **Code:**
Original Specific Comment #: 94
Comment: U.S. DOE added two references (EPA 1990d and 1991e) related to the U.S. EPA uptake biokinetic (UBK) model.

However, the second reference is incorrect, and the version number of the model was dropped. Therefore, the reference to "(EPA 1991e)" should be changed to "(EPA 1991d)" and "the EPA UBK model" should be changed to "Version 0.60 of the EPA UBK model."

Response:
Action:

Commenting Organization: U.S. EPA **Commentor:** Saric
Section #: 6.6 **Page #:** 6-10 **Line #:** 16 through 18 **Code:**
Original Specific Comment #: 103
Comment: In general, U.S. DOE's response is satisfactory. However, U.S. DOE states that "as a practical matter, however, these data limitations probably represent risks that are trivial compared with the risks associated with exposure to the contents of the silos." This statement is misleading because exposure to the silo contents may not occur and removal of the silo contents does not necessarily reduce the risk from exposure to contaminants that may not have been adequately characterized in the RI. This statement should therefore be removed from the text.
Response:
Action:

Commenting Organization: U.S. EPA **Commentor:** Saric
Section #: D.4.2 **Page #:** D-4-18 and D-4-19 **Line #:** N**Code:**
New Comment #: 1
Comment: Table D.4-5 should have a reference. U.S. EPA compared the values given in the table to those found in three reference books and was unable to determine the source of the values in Table D.4-5 (Merck and Company, Inc. 1989; Eisenbud 1987; U.S. U.S. EPA 1992).
Response:
Action:

REFERENCES

Merck and Company, Inc. 1989. *The Merck Index*. Eleventh Edition. Susan Budavari, Editor. Rahway, New Jersey.

Eisenbud, Merril. 1987. *Environmental Radioactivity*. New York. Academic Press, Inc.

U.S. Environmental Protection Agency (EPA). 1992. "Guidance for Data Useability in Risk Assessment (Part B)." Publication 9285.7-09B.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: September 29, 1993

SUBJECT: Review of Remedial Investigation Report for Operable Unit 4, Fernald Environmental Management Project (FEMP), Fernald, OH, August 1993

FROM: Pat Van Leeuwen, Toxicologist PVL
Technical Support Unit

TO: Jim Saric
Project Manager

I have reviewed the risk assessment portion (Appendix D) of the revised Remedial Investigation Report for Operable Unit 4 of the Fernald Environmental Management Project (FEMP), dated August 1993. I have focussed primarily on responses to my comments. However, responses to other commenters occasionaly resulted in changes to other sections of the report which were not acceptable. I am not certain I have reviewed all the changes, as no summary of text changes was provided by page. Perhaps, future changes can be indicated in the review copy by shading or bold print. This would greatly speed up reviews.

If you have any questions on these comments or any section of the risk assessment, please contact me at 886-4904.

Original Comment #1 The response to this comment is acceptable.

Original comment #2 The response to this comment is acceptable. I have only one additional comment: the unit risk factors (URFs) should have medium concentration units specified in the tables in Attachments D.I and D.II. The URFs generated here are concentration-specific, as well as medium- and pathway-specific.
This should also be noted in the text, perhaps in bold print, as a precaution against any incorrect application.

Original Comments # 3-11 The responses to these comments are acceptable

Original Comment # 12 Regarding the SA parameter values for the Dermal Contact with Soil/Sediments pathway, please

reread the OSWER Directive 9285.6-03. The directive specifies that the upper-bound values should be used for IR (intake/contact rate); however the directive does not give values for the dermal exposure pathways, which are discussed in further guidance: the 1992 Dermal Guidance. The body surface area is a measure of contact rate (contact area) in the dermal equations. Therefore, it is appropriate to use the upper-bound values (95th percentile values) as indicated in the dermal guidance. The changes should be made in all dermal contact scenarios.

I agree that the upper-bound values recommended for ET and EF may not be appropriate for the Incidental Ingestion and Dermal Contact with Surface Water pathways. I said that the difference requires discussion of the scenario and justification in the text. I think that the likelihood of wading in Paddys Run is high for the tresspasser, and I could justify an exposure scenario of 1 hr/event x 52 events/year x upper-bound SA for partial body exposed.

Original Comment # 13, Table D.3-12 There are still problems with footnotes here. Reference "d" (Region III screening tables) is not a justification for choosing a site-specific parameter value anywhere; it was used by Region III as a default for a screening method, with the intent that the parameter values would be replaced by site-specific values. I also asked for the basis of the values referenced as "e" and "f" to be included; adding the teleconference notation does not give the reader any insight into the basis of the values used for this assessment. Describe the exposure (see footnote "d" and "e" in table D.3-11 for example).

The SA for the dermal contact pathways does not reflect the RME exposure. See comment # 12 above.

The new On-site Farmer IR does not reflect the inclusion of the 480 mg/day occupational exposure; footnote "p" does nothing to explain this value and is meaningless.

Original Comment # 14 The response is acceptable.

Original Comment # 15 What is "Webster et al. (1991)" given as the reference in footnote "b" in Table D.3-14? How does this reference fit into the hierarchy listed in the action for this comment?

Original Comment # 16 The response to this comment is acceptable.

Original Comment # 17 The discussion on page D-4-46 does not explain that the TEF values listed in Table D.4-6 are recommendations and are based on skin-painting studies, not oral ingestion. This difference would indicate that a less exact TEF value should be used - at best the values rounded to one significant digit. USEPA has recommended using only the order of magnitude ranking, but I prefer the former approach.

Original Comment # 18 The explanations of the

conversion of the RfC to the RfD and the Unit Risk to the SF do not point out that the calculation of the administered dose is affected by lung physiology, dust particle size, etc., whereas the comparison of the air concentration with the RfC or Unit Risk value provides a direct and probably more accurate estimate of risk. That is why USEPA is moving toward the RfC/Unit Risk approach for inhalation exposure.

I provided FERMCO with the same ECAO issue paper on the provisional RfD for cobalt that is referenced as "Region III guidance". The reference should be ECAO issue paper on cobalt, 1992. We seem to have a communication gap here.

Original Comment # 19 Region V provided a list of oral and dermal absorption effiency values from ECAO to FERMCO for use in FEMP risk assessments. Although the headers on the memos from ECAO indicate that the values were provided in response to requests from other toxicologists evaluating other sites, only peer reviewed papers were considered by the ECAO contractors who recommended these absorption values. These are the same contractors who review literature data and provide absorption values and concentration values to the EPA workgroup for development of EPA's toxicity values. In the interest of consistency, these recommendations should be used. Some contractors may not agree with the studies chosen for the evaluation. However, as I previosly stated, USEPA does not expect each contractor to develop their own set of absorption factors and toxicity values, but expects that values derived by their own (EPA's) contractor through the Environmental Criteria and Assessment Office (ECAO) to be used in the risk assessment. I do not have the time to do literature searchs and review these derivations, and will not accept contractor derivations that differ from recommendations received from ECAO unless ECAO cannot provide any useful information, If the FERMCO risk assessment team wishes to submit their evaluations, on a chemical by chemical basis, to ECAO and its contractors for review, we can do this. However, FERMCO will still be bound by the same time schedule.

Original Comments # 20-23 The responses to these comments are acceptable.

Original Comment # 24 The discussion on page D-6-7 fails to point out that the TEF values presented in Table D.4-6 are recommendations based on skin-painting studies, not on orally administered doses. Therefore, application of these TEF values to oral effects of PAHs may result in some inaccuracy. At best, the TEF values are usful to indicate potential differences in magnitude of effect between the B2 carcinogens.

Original Comment # 25 Table D.7-1 gives the Total Risk (All Media) risk as the sum of risks from both radiation and chemical exposures. This is acceptable, but a better format would be to separate the risks from these two kind of exposure as the remediation actions may differ. This presentation leaves the calculations to the RPM.

New Comment # 1 Page D-2-12, Section D.2.3.2 (1) The use of aluminum as an example in #3 is not a good choice; aluminum has a provisional RfD of 1 mg/kg/day (affected by chemical form). (2) Regarding the elimination of chemicals detected infrequently/only in one medium, such chemicals should not be eliminated as CPCs without the approval of the EPA site RPM or toxicologist. Frequency of detection is a nebulous thing, and depends on the numbers of samples taken and the distribution of samples. Some contaminants, due to their chemical properties, will only be found in one medium.

New Comment # 2 Page D-1-2, line 12 Why was "within" operable unit 4 changed to "adjacent" to operable unit 4? Also in line 14, "within" is changed to "within or near". Please comment on this change.

New Comment #3 Page D-2-13, Section D.2.3.3.1, line 3 To what does the added notation of "oil and grease" refer to here?

New Comment #4 Page d-2-13, Section D.2.3.3.2, line 13 Table D.2.4 indicates that antimony was detected at a frequency of 1/1; that's 100% of the samples. Infrequent detection is not an appropriate argument for elimination. Please comment

New Comment # 5 Table D.3-4, page D-3-25 This and subsequent tables show many additions and some eliminations - e.g., 2-hexanone and 4-methyl-2-pentanone. I did not see any comment in the FERMCO responses to indicate the reasons for this elimination of organic contaminants.

New Comment # 6 Page D-4-36, Tox Profile for Lead The statement in line 36 is inflammatory, in the least. Actually USEPA has a high regard for the EPA UBK (IEUBK) Lead Model; its use is recommended by SAB, who has reviewed it. The use of the OSWER directive is more applicable at this site, which does not afford current measures of residential exposure (e.g., water, indoor dust, paint, etc.).

New Comment # 7 Section D.4.2, Tox Profiles It would impove the readability of this section if the names of the chemicals were in capital letters or in bold print.